



## Java project integration with ML model for prediction

By now, we have already completed the ML project and created a ML model. In this document, we are sharing the process of integrating that ML model from JAVA application for prediction.

For doing this, we need the knowledge of **Flask**, apart from Python and Java.

### Flask Integration -

**Flask is a web application framework** written in python. We need to use Flask api to get the prediction from our machine learning pre-trained model.

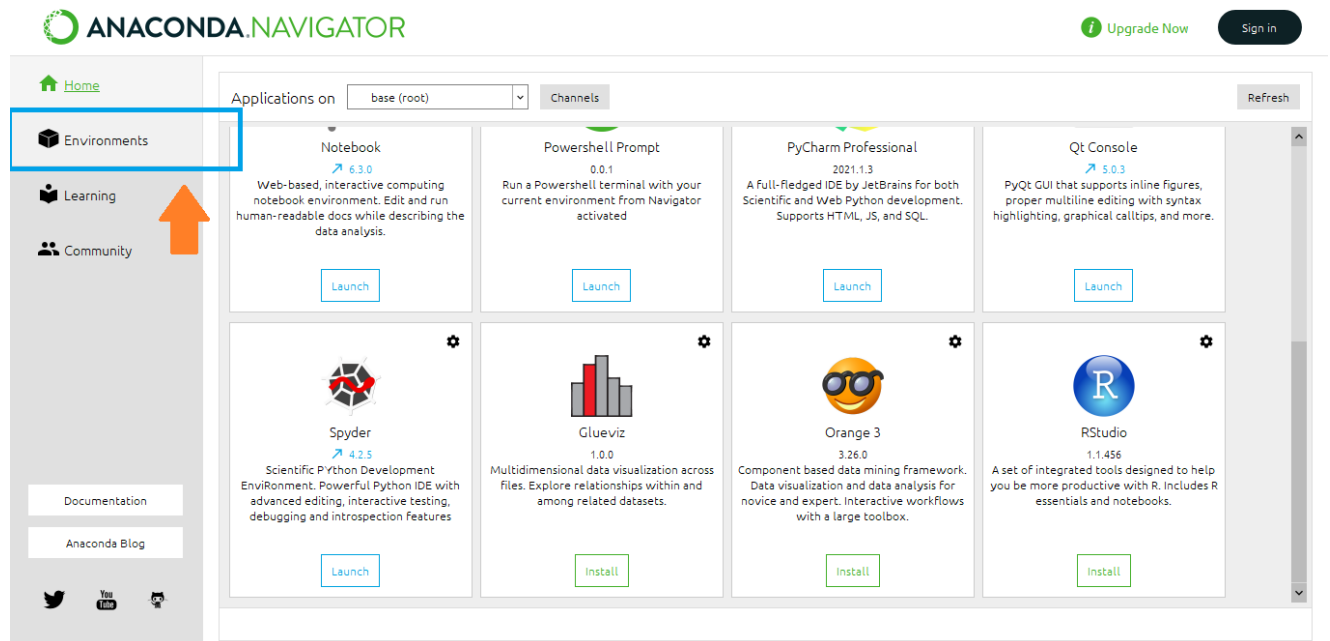
**Note : Use your model file which you have created in ML Project. Keep the name of the model file as “model.sav”**

```
day_of_due , month_of_due , year_of_due ]  
model = pickle.load(open("model.sav", 'rb'))  
final_result = model.predict(nulldata2)  
final_result = pd.Series(final_result,name='avg_delay')
```

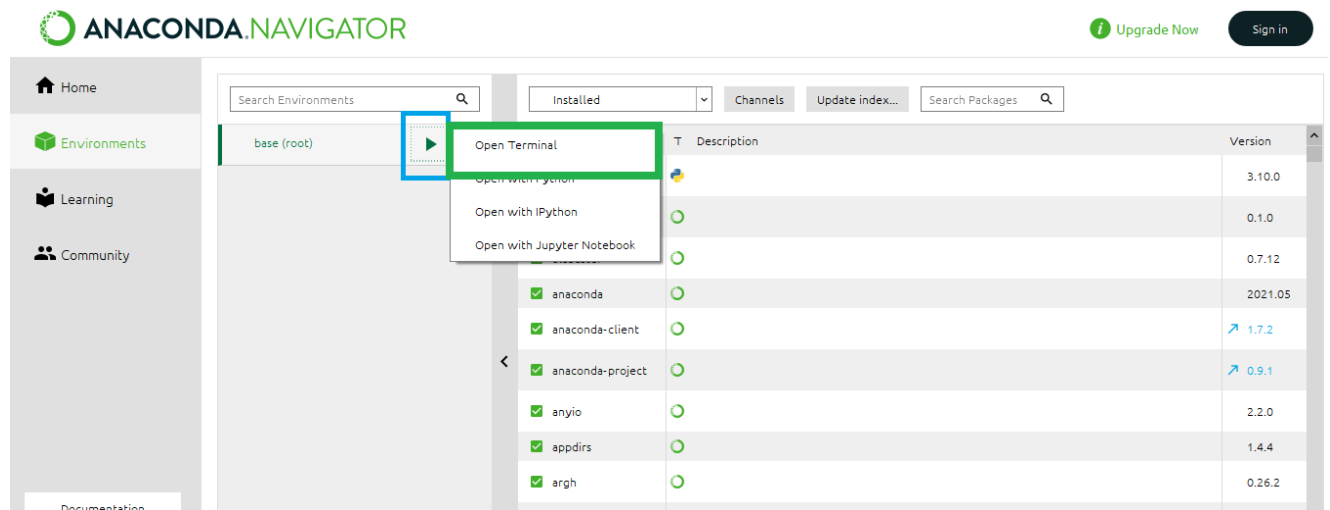
### Steps 1 - Check for the Flask package

Flask Package generally comes with the anaconda by default. To check if flask present or not

we can open terminal of anaconda -



Click on the **environment option**, at the left side, then click on the play button right beside the base environment, and need to open the terminal.



3. Open the terminal, and check for the python version. The python version should be **Python 3.8**.

```
python --version
```

The screenshot shows the Anaconda Navigator interface. On the left sidebar, the 'Environments' tab is selected. The main panel displays a list of installed environments. A terminal window is open, showing the command `python --version` being executed in the `(base) C:\Users\chandramuli.das` environment. The output is `Python 3.8.8`, which is highlighted with a blue box. The background shows a table of installed packages with columns for Name, Description, and Version.

Name	Description	Version
smplotlib.metadata		3.10.0
		0.1.0
		0.7.12
		2021.05
		1.7.2
		0.9.1
		2.2.0
		1.4.4
		0.26.2
		20.1.0
asn1crypto		1.4.0
astroid		2.5

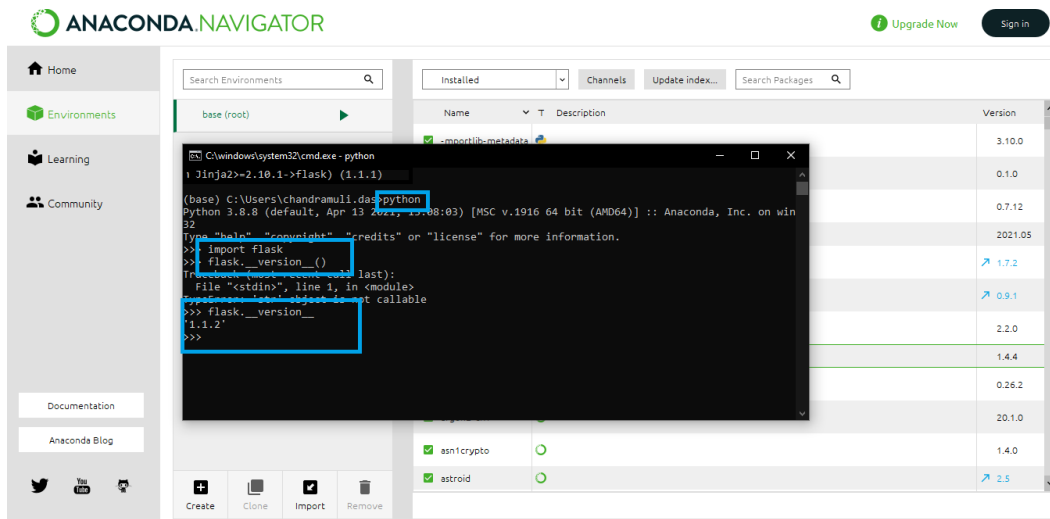
#### 4. Check for the Flask -

Command - **pip install flask**

The screenshot shows the Anaconda Navigator interface. On the left sidebar, the 'Environments' tab is selected. The main panel displays a list of installed environments. A terminal window is open, showing the command `pip install flask` being executed in the `(base) C:\Users\chandramuli.das` environment. The output shows that Flask is being installed, and several dependencies are already satisfied. The command `pip install flask` is highlighted with a blue box. The background shows a table of installed packages with columns for Name, Description, and Version.

Name	Description	Version
smplotlib.metadata		3.10.0
		0.1.0
		0.7.12
		2021.05
		1.7.2
		0.9.1
		2.2.0
		1.4.4
		0.26.2
		20.1.0
asn1crypto		1.4.0
astroid		2.5

- a. If the flask is not pre installed, it will start the installation
- b. If the flask is already installed, it will return “**Requirement Already Satisfied**”



- c. The flask version should be **1.1.2**

## Step 2- Prediction -

The default page is following -

Predict

Analytics View

Advance Search

Search Customer Id

ADD

EDIT

DELETE

	Sl no	Business Code	Customer Number	Clear Date	Business Year	Document Id	Posting Date	Document Create Date	Due Date	Invoice Currency	Document Type	Posting Id	Total Open amount
<input checked="" type="checkbox"/>	1	U001	200769623	2020-02-11	2020-01-01	1930438491	2020-01-26	2020-01-25	2020-02-10	USD	RV	1	54273.28
<input type="checkbox"/>	2	U001	200980828	2019-08-08	2019-01-01	1929646410	2019-07-22	2019-07-22	2019-08-11	USD	RV	1	79656.6
<input checked="" type="checkbox"/>	3	U001	200792734	2019-12-30	2019-01-01	1929873765	2019-09-14	2019-09-14	2019-09-29	USD	RV	1	2253.86
<input type="checkbox"/>	4	CA02	140105686	0000-00-00	2020-01-01	2960623488	2020-03-30	2020-03-30	2020-04-10	CAD	RV	1	3299.7
<input type="checkbox"/>	5	U001	200769623	2019-11-25	2019-01-01	1930147974	2019-11-13	2019-11-13	2019-11-28	USD	RV	1	33133.29

Rows per page:

5

1-5 of 200

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Select the number of rows for which we need to predict the Aging Bucket. Click on the **Predict** button.

Predict

Analytics View

Advance Search

Search Customer Id

ADD

EDIT

DELETE

	Sl no	Business Code	Customer Number	Clear Date	Business Year	Document Id	Posting Date	Document Create Date	Due Date	Invoice Currency	Document Type	Posting Id	Total Open amount
<input checked="" type="checkbox"/>	1	U001	200769623	2020-02-11	2020-01-01	1930438491	2020-01-26	2020-01-25	2020-02-10	USD	RV	1	54273.28
<input type="checkbox"/>	2	U001	200980828	2019-08-08	2019-01-01	1929646410	2019-07-22	2019-07-22	2019-08-11	USD	RV	1	79656.6
<input checked="" type="checkbox"/>	3	U001	200792734	2019-12-30	2019-01-01	1929873765	2019-09-14	2019-09-14	2019-09-29	USD	RV	1	2253.86
<input type="checkbox"/>	4	CA02	140105686	0000-00-00	2020-01-01	2960623488	2020-03-30	2020-03-30	2020-04-10	CAD	RV	1	3299.7
<input type="checkbox"/>	5	U001	200769623	2019-11-25	2019-01-01	1930147974	2019-11-13	2019-11-13	2019-11-28	USD	RV	1	33133.29



Rows per page:

5

1-5 of 200

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Once we click the **Predict** button, it will populate the prediction on the desired row as shown below:


**ABC Products**


### Invoice List

Predict
Analytics View
Advance Search
↻

ADD
EDIT
DELETE

Business Year	Document Id	Posting Date	Document Create Date	Due Date	Invoice Currency	Document Type	Posting Id	Total Open amount	Baseline Create Date	Customer Payment Terms	Invoice Id	Aging Bucket
2020-01-01	1930438491	2020-01-26	2020-01-25	2020-02-10	USD	RV	1	54273.28	2020-01-26	NAH4	1930438491	0-15
2019-01-01	1929646410	2019-07-22	2019-07-22	2019-08-11	USD	RV	1	79656.6	2019-07-22	NAD1	1929646410	0-15
2019-01-01	1929873765	2019-09-14	2019-09-14	2019-09-29	USD	RV	1	2253.86	2019-09-14	NAA8	1929873765	nan
2020-01-01	2960623488	2020-03-30	2020-03-30	2020-04-10	CAD	RV	1	3299.7	2020-03-31	CA10	2147483647	0-15
2019-01-01	1930147974	2019-11-13	2019-11-13	2019-11-28	USD	RV	1	33133.29	2019-11-13	NAH4	1930147974	N/A

Rows per page: 5
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## The Flask code -

Once we trigger the prediction, the following code will run, and the following code will run.

```
In [1]: 1 from flask import Flask, redirect, url_for, render_template, request, jsonify, make_response
2 import New_Bucket
3 import pandas as pd
4 data = pd.DataFrame()
5 app = Flask(__name__)
6
7 @app.route("/", methods=["POST", "GET"])
8 def home():
9     if request.method == "POST":
10         print(request.form)
11         business_code = request.form["business_code"]
12         cust_number = request.form["cust_number"]
13         name_customer = request.form["name_customer"]
14         clear_date = request.form["clear_date"]
15         buisness_year = int(request.form["buisness_year"])
16         doc_id = int(request.form["doc_id"])
17         posting_date = request.form["posting_date"]
18         due_in_date = request.form["due_in_date"]
19         baseline_create_date = request.form["baseline_create_date"]
20         cust_payment_terms = request.form["cust_payment_terms"]
21         converted_usd = float(request.form["converted_usd"])
22         data['business_code'] = [business_code]
23         data['cust_number'] = [cust_number]
24         data['name_customer'] = [name_customer]
25         data['clear_date'] = [clear_date]
26         data['buisness_year'] = [buisness_year]
27         data['doc_id'] = [doc_id]
28         data['posting_date'] = [posting_date]
29         data['due_in_date'] = [due_in_date]
```

Click here to access the [Master folder](#). After a successful run the desired output will populate the column.

Steps to Run -

1. Download the folder from the above link
2. Open the integration.py file in jupyter notebook
3. From the Payment Date Prediction notebook file, save the final model.
4. Rename the **your ML Project** model name as **"model.sav"**
5. Store the **"model.sav"** into the master folder.
6. Run the Jupyter Notebook.